MAINTENANCE BULLETIN

NO. 163
SEPT 1999

ALFA COMPANY

4111 San Pedro St., Bldg. 1443
Port Hueneme, Ca. 93043-4410

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You are invited to send your ideas for improving maintenance procedures, suggestions for articles, or comments on material published in the Maintenance Bulletin.
Just write to:

OFFICER IN CHARGE
NAVFACENGCOMDET
Seabee Logistic Center
Logistic Directorate (Code 43)
4111 San Pedro St., Bldg. 1443
Port Hueneme, Ca 93043-4410

COSAL CHANGES

APL	APL,CAGE, P/N	NSN NOMENCLATURE	NEW QTY	UOI	MAIN. LEVEL	PRICE	1	2	3	4	5-8	9-20
0001 Delete	955010001	5330-00-179-0050 RUBBER SHEET	0	SY			3					
0001 Delete	955010001	5330-00-179-0051 RUBBER SHEET	0	SY			3					
0002 Delete	955010001	5330-00-179-0050 RUBBER SHEET	0	SY			3					
0002 Delete	955010001	5330-00-179-0051 RUBBER SHEET	0	SY			3					
6488 ADD	950106488 Cage 11862 P/N 8677743	5330-01-360-5271 GASKET	1	EA	O	41.32	1	1	1	1	2	3
6260 Delete	950106260	4330-01-358-2549 FILTER ELEMENT FLUID	0	EA		10.50						
6293 Delete	950106293	4330-01-358-2549 FILTER ELEMENT FLUID	0	EA		10.50						
6336 Delete	950106336	4330-01-358-2549 FILTER ELEMENT FLUID	0	EA		10.50						
6434 Delete	950106434	4330-01-358-2549 FILTER ELEMENT FLUID	0	EA		10.50						
6488 Delete	950106488	4330-01-358-2549 FILTER ELEMENT FLUID	0	EA		10.50						
6260 ADD	950106260 Cage 11862 P/N 8684221	2520-01-398-4589 PARTS KIT, HYDRAULIC;TRANS	1	EA	O	11.13	1	1	1	1	2	3
6293 ADD	950106293 Cage 11862 P/N 8684221	2520-01-398-4589 PARTS KIT, HYDRAULIC;TRANS	1	EA	O	11.13	1	1	1	1	2	3
6336 ADD	950106336 Cage 11862 P/N 8684221	2520-01-398-4589 PARTS KIT, HYDRAULIC;TRANS	1	EA	O	11.13	1	1	1	1	2	3
6434 ADD	950106434 Cage 11862 P/N 8684221	2520-01-398-4589 PARTS KIT, HYDRAULIC;TRANS	1	EA	O	11.13	1	1	1	1	2	3
6488 ADD	950106488 Cage 11862 P/N 8684221	2520-01-398-4589 PARTS KIT, HYDRAULIC;TRANS	1	EA	O	11.13	1	1	1	1	2	3
6526 Delete	950086526	5342-01-354-0782 CAP FILLER	0	EA		24.39						
6526 ADD	950086526 Cage 78225 P/N P-8	2930-00-193-5941 CAP FILLER OPENING	1	EA	O	7.93	1	1	1	1	1	1
6382 Delete	950296382	5977-01-387-9216 BRUSH ELECTRICAL	0	EA		7.75						

COSAL CHANGES

APL	APL,CAGE, P/N	NSN NOMENCLATURE	NEW QTY	UOI	MAIN. LEVEL	PRICE	1	2	3	4	5-8	9-20
6572 Delete	950066572	2940-00-238-5551 FILTER ELEMENT	0	EA								
6572 ADD	950066572 Cage 70040 P/N A333C	2940-00-097-9973 FILTER ELEMENT	1	EA	O	48.72	2	4	6	8	12	30
6526 Delete	950176526	5310-21-913-0938 NUT SPECIAL	0	EA		2.07						
6526 ADD	950176526 Cage 77237 P/N64D-12H	5310-01-272-5192 NUT SPECIAL	10	EA	S	4.05	5	10	14	14	19	29
6279 Delete	950366279	4530-01-368-5543 NOZZLE OUTER	0	EA		158.62						
6596 Delete	950016596	5330-01-440-1380 PARTS KIT, SEAL	0	KT		93.80						
6208 Delete	950306208	5342-01-339-7727 ANODE CORROSION	0	EA								
6223 Delete	950306223	5342-01-339-7727 ANODE CORROSION	0	EA								
0001 Delete	955240001	4720-00-846-6558 HOSE NONMETALIC	0	FT		8.00						
0002 Delete	955240002	4720-00-846-6558 HOSE NONMETALIC	0	FT		8.00						
0001 ADD	955240001 Cage 24161 P/N 28412	4720-00-139-3968 HOSE NONMETALIC	0	FT	O	0.50	1	2	3	4	6	15
0002 ADD	955240002 Cage 24161 P/N 28412	4720-00-139-3968 HOSE NONMETALIC	0	FT	O	0.50	1	2	3	4	6	15
6474 Delete	950086474	5342-01-368-6063 CAP FILLER	0	EA								
6475 Delete	950086475	5342-01-368-6063 CAP FILLER	0	EA								
6474 ADD	950086474 Cage 78225 P/N AX-2950	5340-01-340-8706 CAP FILLER OPENING	1	EA	O		1	1	1	1	1	1
6475 ADD	950086475 Cage 78225 P/N AX-2950	5340-01-340-8706 CAP FILLER OPENING	1	EA	O		1	1	1	1	1	1
6217 Delete	950106217	4330-01-342-2465 FILTER ELEMENT	0	EA		47.46						
6411 Delete	950106411	4330-01-342-2465 FILTER ELEMENT	0	EA		47.46						
6217 ADD	95-0106217 Cage 35284 P/N 49076	2940-01-331-1768 FILTER ELEMENT	1	EA	O	74.20	1	2	3	4	6	15
6411 ADD	950106217 Cage 18265 P16-5569	2940-01-331-1768 FILTER ELEMENT	1	EA	O	74.20	1	2	3	4	6	15

COSAL CHANGES

APL	APL,CAGE, P/N	NSN NOMENCLATURE	NEW QTY	UOI	MAIN. LEVEL	PRICE	1	2	3	4	5-8	9-20
4853 Delete	950094853	2920-01-196-4882 REGULATOR ENGINE	0	EA		23.17						
5097 Delete	950095097	2920-01-196-4882 REGULATOR ENGINE	0	EA		23.17						
5189 Delete	950095189	2920-01-196-4882 REGULATOR ENGINE	0	EA		23.17						
5341 Delete	950095341	2920-01-196-4882 REGULATOR ENGINE	0	EA		23.17						
5393 Delete	950095393	2920-01-196-4882 REGULATOR ENGINE	0	EA		23.17						
5605 Delete	950095605	2920-01-196-4882 REGULATOR ENGINE	0	EA		23.17						
5720 Delete	950095720	2920-01-196-4882 REGULATOR ENGINE	0	EA		23.17						
5769 Delete	950095769	2920-01-196-4882 REGULATOR ENGINE	0	EA		23.17						
5799 Delete	950095799	2920-01-196-4882 REGULATOR ENGINE	0	EA		23.17						
5819 Delete	950095819	2920-01-196-4882 REGULATOR ENGINE	0	EA		23.17						
5831 Delete	950095831	2920-01-196-4882 REGULATOR ENGINE	0	EA		23.17						
5856 Delete	950095856	2920-01-196-4882 REGULATOR ENGINE	0	EA		23.17						
5928 Delete	950095928	2920-01-196-4882 REGULATOR ENGINE	0	EA		23.17						
6211 Delete	950096211	2920-01-196-4882 REGULATOR ENGINE	0	EA		23.17						
6241 Delete	950096241	2920-01-196-4882 REGULATOR ENGINE	0	EA		23.17						
6257 Delete	950096257	2920-01-196-4882 REGULATOR ENGINE	0	EA		23.17						
6306 Delete	950096306	2920-01-196-4882 REGULATOR ENGINE	0	EA		23.17						
6310 Delete	950096310	2920-01-196-4882 REGULATOR ENGINE	0	EA		23.17						
6462 Delete	950096462	2920-01-196-4882 REGULATOR ENGINE	0	EA		23.17						
6476 Delete	950096476	2920-01-196-4882 REGULATOR ENGINE	0	EA		23.17						
6485 Delete	950096485	2920-01-196-4882 REGULATOR ENGINE	0	EA		23.17						
6495 Delete	950096495	2920-01-196-4882 REGULATOR ENGINE	0	EA		23.17						
6515 Delete	950096515	2920-01-196-4882 REGULATOR ENGINE	0	EA		23.17						
6525 Delete	950096525	2920-01-196-4882 REGULATOR ENGINE	0	EA		23.17						

COSAL CHANGES

APL	APL,CAGE, P/N	NSN NOMENCLATURE	NEW QTY	UOI	MAIN. LEVEL	PRICE	1	2	3	4	5-8	9-20
6584 Change	950016584 Cage 15434 P/N 3904320	2930-01-196-3475 CORE COOLER		EA	Z	155.27						
6313 Change	950026313 Cage 15434 P/N 3904320	2930-01-196-3475 CORE COOLER		EA	Z	155.27						
6584 Change	950016584 Cage 15434 P/N 3921557	2930-01-196-3475 CORE COOLER		EA	Z	155.27						
5843 Change	950065843 Cage 61552 P/N 28120	2940-01-158-1461 FILTER ELEMENT		EA	O	76.20	2	4	6	8	12	30
6077 Change	950066077 Cage 61552 P/N 28120	2940-01-158-1461 FILTER ELEMENT		EA	O	76.20	2	4	6	8	12	30
0001 Change	955250001	5940-00-549-6581 TERMINAL LUG	1	PG		35.25						
0002 Change	955250002	5940-00-549-6581 TERMINAL LUG	1	PG		35.25						
0001 Change	955250001	5940-00-738-6272 COVER BATTERY TERMINAL	1	PG								
0002 Change	955250002	5940-00-738-6272 COVER BATTERY TERMINAL	1	PG								
3826 Delete	950013826	5305-00-947-3437 SETSCREW	0	PG								
4655 Delete	950014655	5305-00-947-3437 SETSCREW	0	PG								
6596 Delete	950446596	0099-LL-H48-0774 WASHER	0	EA								
0001 Change	955250001	5940-00-113-8191 TERMINAL LUG	1	EA								
0001 ADD	955070001 Cage 53705 P/N9470A	2640-00-052-0865 VALVE PNEUMATIC TIRE	20	EA		1.38						
0001 ADD	955070001 Cage 17875 P/NVS419A	2640-00-052-0867 VALVE PNEUMATIC TIRE	5	EA		1.55						
0001 ADD	955070001 Cage 17875 P/NVS420R	2640-00-052-0868 VALVE PNEUMATIC TIRE	5	EA		2.72						
0001 ADD	955070001 Cage 53477 P/N 3881	2640-00-052-0914 VALVE PNEUMATIC TIRE	5	EA		5.58						
0001 ADD	955070001 Cage 53477 P/N 3974	2640-00-052-0918 VALVE PNEUMATIC TIRE	5	EA		12.29						

COSAL CHANGES

APL	APL,CAGE, P/N	NSN NOMENCLATURE	NEW QTY	UOI	MAIN. LEVEL	PRICE	1	2	3	4	5-8	9-20
0001 ADD	955070001 Cage 10236 8500168-2	2640-00-060-3543 VALVE CORE	150	EA		0.26						
0001 ADD	955070001 CAGE 07295 P/N 40535	2640-00-060-3550 CAP PNEUMATIC VALVE	250	EA		0.06						
0001 ADD	955070001 Cage 53477 5106AB196	2640-00-114-5071 VALVE EXTENSION TIRE	5	EA		6.36						
0001 ADD	955090001 Cage 28954 P/N T8A10	2640-00-138-8346 PLUG AND PACH TIRE	1	BX		40.51						
0001 ADD	955090001 Cage 28954 P/N T18C13	2640-00-138-8350 PLUG AND PACH TIRE	1	BX		120.00						
0001 ADD	955090001 Cage 28954 P/N T10E19	2640-00-138-8361 PLUG AND PATCH TIRE	1	BX		221.00						
0001 ADD	955070001 Cage 79934 P/N TR571	2640-00-555-2822 VALVE PNEUMATIC TIRE	10	EA		1.11						
0001 ADD	955070001 Cage 27783 P/N 595	2640-00-555-2838 VALVE PNEUMATIC TIRE	10	EA		0.76						
0001 ADD	955070001 Cage 17875 P/N T14R	2640-00-555-2840 VALVE PNEUMATIC TIRE	15	EA		0.31						
0001 ADD	955070001 Cage 59500 P/N 75365	2640-00-555-2842 VALVE PNEUMATIC TIRE	15	EA		0.94						
0001 ADD	955070001 Cage 53477 P/N 505	2640-00-608-0931 VALVE PNEUMATIC TIRE	10	EA		2.47						
0001 ADD	955070001 Cage 17875 VI402AH	2640-00-810-5861 VALVE CORE	1	BX		0.09						
0001 ADD	955250001 Cage 19207 11614156	6220-00-880-1624 LIGHT ASSY MARKER	2	EA		27.09						
0001 ADD	955070001 Cage 17875 VS978J670	2640-00-995-3138 VALVE PNEUMATIC TIRE	5	EA		2.84						
0001 ADD	955250001 Cage 75037 MN10BC	5940-01-387-1746 CONNECTOR PLUG ELEC	1	BX		10.02						
0002 ADD	955070002 Cage 53705 P/N 9470A	2640-00-052-0865 VALVE PNEUMATIC TIRE	20	EA		1.38						

COSAL CHANGES

APL	APL,CAGE, P/N	NSN NOMENCLATURE	NEW QTY	UOI	MAIN. LEVEL	PRICE	1	2	3	4	5-8	9-20
0002 ADD	955070002 Cage 17875 P/N VS419A	2640-00-052-0867 VALVE PNEUMATIC TIRE	5	EA		1.55						
0002 ADD	955070002 Cage 17875 P/NVS420R	2640-00-052-0868 VALVE PNEUMATIC TIRE	5	EA		2.72						
0002 ADD	955070002 Cage 10236 8500168-2	2640-00-060-3543 VALVE CORE	150	EA		0.26						
0002 ADD	955070002 Cage 07295 P/N 40535	2640-00-060-3550 CAP PNEUMATIC VALVE	250	EA		0.06						
0002 ADD	955070002 Cage 79934 P/N TR571	2640-00-555-2822 VALVE PNEUMATIC TIRE	10	EA		1.11						
0002 ADD	955070002 Cage 27783 P/N 595	2640-00-555-2838 VALVE PNEUMATIC TIRE	10	EA		0.76						
0002 ADD	955070002 Cage 17875 P/N T14R	2640-00-555-2840 VALVE PNEUMATIC TIRE	15	EA		0.31						
0002 ADD	955070002 Cage 59500 P/N 75365	2640-00-555-2842 VALVE PNEUMATIC TIRE	15	EA		0.94						
0002 ADD	955070002 Cage 53477 P/N 505	2640-00-608-0931 VALVE PNEUMATIC TIRE	10	EA		2.47						
0002 ADD	955070002 Cage 17875 VI402AH	2640-00-810-5861 VALVE CORE	1	BX		0.09						
0002 ADD	955250002 Cage 19207 11614156	6220-00-880-1624 LIGHT ASSY MARKER	2	EA		27.09						
0002 ADD	955070002 Cage 17875 VS978J670	2640-00-995-3138 VALVE PNEUMATIC TIRE	5	EA		2.84						
6606 Change	950166606 Cage 4Y187 6.437-117	2530-01-444-0847 CABLE AND CONDUIT		EA	G	177.10	0	0	0	0	1	1
6606 Change	950166606 Cage 4Y187 6.437-152	2530-01-444-0852 BRAKE SHOE SET IN		SE	G	214.49	0	0	0	1	1	1
6606 Change	950166606 Cage 4Y187 6.437-182	2530-01-444-0848 CABLE AND CONDUIT		EA	G	118.80	0	0	0	0	1	1
6606 Change	950176606 Cage 81348 GP3STYLXT YBBCLR/T	2610-00-294-4944 TIRE PNEUMATIC		EA	G		0	0	0	0	1	1

COSAL CHANGES

APL	APL,CAGE, P/N	NSN NOMENCLATURE	NEW QTY	UOI	MAIN. LEVEL	PRICE	1	2	3	4	5-8	9-20
6606 Change	950176606 Cage 4Y187 6.437-301	5330-01-442-9293 PARTS KIT SEAL		KT	G		0	0	0	0	1	1
6606 Change	950176606 Cage 4Y187 7.401-300	3110-01-057-9576 BEARING ROLLER TA		EA	G		0	0	0	0	1	1
6606 Change	950176606 Cage 4Y187 7.401-301	3110-00-156-8058 BEARING BALL ANNU		EA	G		0	0	0	0	1	1
6606 Change	950226606 Cage 4Y187 6.339-066	2510-01-444-0991 SPRING ELEMENT		EA	G	153.36	0	0	0	0	1	1
6606 Change	950226606 Cage 4Y187 6.339-085	2510-01-444-0990 SPRING ELEMENT		EA	G	153.36	0	0	0	0	1	1
6606 Change	950226606 Cage 4Y187 6.437-102	2530-01-444-0787 BELLOWS		EA	G	43.10	0	0	0	0	1	1
6606 Change	950336606 Cage 4Y187 6.421-117	6685-01-443-6699 MANOMETER		EA	H		0	0	0	0	1	1
6606 Change	950336606 Cage 4Y187 6.421-119	6685-01-443-7357 MANOMETER		EA	H		0	0	0	0	1	1
6606 Change	950336606 Cage 4Y187 6.423-049	6685-01-443-6201 INDICATOR TEMP		EA	H		0	0	0	0	1	1
6606 Change	950336606 Cage 4Y187 2.880-396	5330-01-442-9292 PARTS KIT SEAL		EA	G		1	2	3	3	4	6
6606 Change	950336606 Cage 4Y187 2.880-397	4710-01-447-5045 TUBE ASSEMBLY SET		EA	Z	112.20						
6606 Change	950336606 Cage 4Y187 4.130-070	4530-01-447-4673 NOZZLE OIL BURNER		EA	G	109.10	1	1	2	2	3	4
6606 Change	950336606 Cage 4Y187 4.583-007	4820-01-443-1316 VALVE REGULATING		EA	Z							
6606 Change	950336606 Cage 4Y187 4.642-007	4520-01-447-4670 HEAT EXCHANGER		EA	Z	643.50					4	4
6606 Change	950336606 Cage 4Y187 4.664-070	7310-01-450-4093 BURNER COWL		EA	Z	361.90					4	4
6606 Change	950336606 Cage 4Y187 5.130-056	0099-LL-H48-9255 NOZZLE OIL BURNER		EA	Z		8	8	8	8	8	8

COSAL CHANGES

APL	APL,CAGE, P/N	NSN NOMENCLATURE	NEW QTY	UOI	MAIN. LEVEL	PRICE	1	2	3	4	5-8	9-20
6606 Change	950336606 Cage 4Y187 5.731-010	4330-01-442-8212 FILTER ELEMENT FL		EA	Z		1	2	3	4	6	15
6606 Change	950336606 Cage 4Y187 6.321-036	5355-01-450-4738 KNOB		EA	Z	13.50				4	4	4
6606 Change	950336606 Cage 4Y187 6.362-052	5330-01-443-0340 SEAL RING METAL		EA	Z		4	4	4	4	4	4
6606 Change	950336606 Cage 4Y187 6.362-077	5330-01-443-0354 O-RING		EA	Z		4	4	4	4	4	4
6606 Change	950336606 Cage 4Y187 6.362-153	5330-01-443-0352 O-RING		EA	Z		4	4	4	4	4	4
6606 Change	950336606 Cage 4Y187 6.362-160	5330-01-443-0346 O-RING		EA	Z		12	12	12	12	12	12
6606 Change	950336606 Cage 4Y187 6.362-506	5330-01-443-0341 O-RING		EA	Z		4	4	4	4	4	4
6606 Change	950336606 Cage 4Y187 6.362-510	5330-01-443-0347 O-RING		EA	Z		8	8	8	8	8	8
6606 Change	950336606 Cage 4Y187 6.362-512	5330-01-443-0344 SEAL METAL RING		EA	Z		4	4	4	4	4	4
6606 Change	950336606 Cage 4Y187 6.362-513	5330-01-443-0345 O-RING		EA	Z		8	8	8	8	8	8
6606 Change	950336606 Cage 4Y187 6.362-515	5330-01-443-0349 O-RING		EA	Z		4	4	4	4	4	4
6606 Change	950336606 Cage 4Y187 6.362-527	5330-01-447-4042 PACKING PREFORMED		EA	Z	1.90	4	4	4	4	4	4
6606 Change	950336606 Cage 4Y187 6.362-535	5330-01-443-0350 O-RING		EA	Z		4	4	4	4	4	4
6606 Change	950336606 Cage 4Y187 6.362-545	5330-01-443-0351 O-RING		EA	Z		4	4	4	4	4	4
6606 Change	950336606 Cage 4Y187 6.362-572	5330-01-443-0339 O-RING		EA	Z		6	6	6	6	6	6
6606 Change	950336606 Cage 4Y187 6.362-707	5330-01-443-0348 O-RING		EA	Z		8	8	8	8	8	8

COSAL CHANGES

APL	APL,CAGE, P/N	NSN NOMENCLATURE	NEW QTY	UOI	MAIN. LEVEL	PRICE	1	2	3	4	5-8	9-20
6606 Change	950336606 Cage 4Y187 6.365-072	5330-01-443-0353 SEAL RING METAL		EA	Z		4	4	4	4	4	4
6606 Change	950336606 Cage 4Y187 6.393-277	5330-01-443-8037 SEAL NONMETALLIC		EA	Z		1	1	1	1	2	2
6606 Change	950336606 Cage 4Y187 6.393-297	5360-01-443-0319 SPRING HELICAL COIL		EA	Z		4	4	4	4	4	4
6606 Change	950336606 Cage 4Y187 6.393-298	5360-01-443-0311 SPRING HELICAL COIL		EA	Z		4	4	4	4	4	4
6606 Change	950336606 Cage 4Y187 6.393-301	5330-01-443-8039 SEAL RING METAL		EA	Z		2	2	2	2	2	2
6606 Change	950336606 Cage 4Y187 6.393-338	4820-01-443-1312 VALVE SAFETY RELIEF		EA	G		0	0	0	0	1	1
6606 Change	950336606 Cage 4Y187 6.393-394	5330-01-443-8038 SEAL NONMETALLIC		EA	Z		1	1	1	1	1	1
6606 Change	950336606 Cage 4Y187 6.393-438	5330-01-443-8036 SEAL RING METAL		EA	Z		2	2	2	2	2	2
6606 Change	950336606 Cage 4Y187 6.412-440	4820-01-443-1314 VALVE SAFETY RELIEF		EA	G		0	0	0	0	1	1
6606 Change	950336606 Cage 4Y187 6.412-765	0099-LL-H48-9237 VALVE CORE		EA	Z		4	4	4	4	4	4
6606 Change	950336606 Cage 4Y187 6.423-048	6685-01-443-6202 REGULATOR TEMPERA		EA	G		0	0	0	0	1	1
6606 Change	950336606 Cage 4Y187 6.685-216	4810-01-443-0873 VALVE SOLENOID		EA	G		0	0	0	0	1	1
5488 Delete	950095488	6680-01-175-0565 GAGE,GAS FLOW	0	EA		106.51						
1719 Change	950171719 Cage 6L214 P/N 559374	2610-00-262-8653 TIRE PNEUMATIC	3	EA	OZ	149.00						
3406 Change	950173406 Cage 6L214 P/N 559374	2610-00-262-8653 TIRE PNEUMATIC	2	EA	OZ	149.00						
3407 Change	950173407 Cage 6L214 P/N 559374	2610-00-262-8653 TIRE PNEUMATIC	2	EA	OZ	149.00						

COSAL CHANGES

APL	APL,CAGE, P/N	NSN NOMENCLATURE	NEW QTY	UOI	MAIN. LEVEL	PRICE	1	2	3	4	5-8	9-20
3536 Change	950173536 Cage 6L214 P/N 559374	2610-00-262-8653 TIRE PNEUMATIC	1	EA	OZ	149.00						
3604 Change	950173604 Cage 6L214 P/N 559374	2610-00-262-8653 TIRE PNEUMATIC	1	EA	OZ	149.00						
3826 Change	950173826 Cage 6L214 P/N 559374	2610-00-262-8653 TIRE PNEUMATIC	3	EA	OZ	149.00						
3938 Change	950173938 Cage 6L214 P/N 559374	2610-00-262-8653 TIRE PNEUMATIC	2	EA	OZ	149.00						
3984 Change	950173984 Cage 6L214 P/N 559374	2610-00-262-8653 TIRE PNEUMATIC	3	EA	OZ	149.00						
5278 Change	950175278 Cage 6L214 P/N 559374	2610-00-262-8653 TIRE PNEUMATIC	2	EA	OZ	149.00						
5417 Change	950175417 Cage 6L214 P/N 559374	2610-00-262-8653 TIRE PNEUMATIC	2	EA	OZ	149.00						
5475 Change	950175475 Cage 6L214 P/N 559374	2610-00-262-8653 TIRE PNEUMATIC	2	EA	OZ	149.00						
5548 Change	950175548 Cage 6L214 P/N 559374	2610-00-262-8653 TIRE PNEUMATIC	3	EA	OZ	149.00						
5581 Change	950175581 Cage 6L214 P/N 559374	2610-00-262-8653 TIRE PNEUMATIC	3	EA	OZ	149.00						
5944 Change	950175944 Cage 6L214 P/N 559374	2610-00-262-8653 TIRE PNEUMATIC	3	EA	OZ	149.00						
5945 Change	950175945 Cage 6L214 P/N 559374	2610-00-262-8653 TIRE PNEUMATIC	3	EA	OZ	149.00						
6188 Change	950176188 Cage 6L214 P/N 559374	2610-00-262-8653 TIRE PNEUMATIC	3	EA	OZ	149.00						
5393 Delete	950175393	2610-00-489-8078 TIRE PNEUMATIC	0	EA								
5393 ADD	950175393 Cage 73842 P/N 8.75X16.5X7 PTLRG	2610-00-489-8079 TIRE PNEUMATIC	4	EA	GZ	58.70	1	1	1	1	1	2
5719 Delete	950105719	2520-01-149-1265 CONTROL VALVE	0	EA		1,959.19						
5837 Delete	950175837	2610-00-294-4944 TIRE PNEUMATIC	0	EA								

COSAL CHANGES

APL	APL,CAGE, P/N	NSN NOMENCLATURE	NEW QTY	UOI	MAIN. LEVEL	PRICE	1	2	3	4	5-8	9-20
6203 Delete	950076203	2990-01-324-6880 MUFFLER EXHAUST	0	EA		93.46						
5965 ADD	950175965	2610-00-726-7648 TIRE PNEUMATIC	2	EA	OZ	66.77	1	1	1	1	1	3
5965 ADD	950175965 Cage 81348 P/N 6.50-10EFLGP	2610-01-264-3165 INNER TUBE PNEUMATIC	2	EA	OZ	8.41	1	1	1	1	1	3
5965 ADD	950175965 Cage 81348 P/N 6.50-10TR150A ON CENTER	2610-00-204-3016 INNER TUBE PNEUMATIC	2	EA	OZ	8.32	1	1	1	1	1	3
5719 Delete	950165719 Cage 81348 P/N 7.00-12 ON CENTER	4310-01-159-1767 PISTON COMPRESSOR	0	EA	GZ							
5719 ADD	950165719 Cage 15434 P/N 3803930	4310-00-603-1510 PISTON COMPRESSOR	1	EA	GZ	53.24	0	0	0	1	1	1
6342 Delete	950446342	3830-01-209-9720 END BIT	0	EA		122.51						
6342 Delete	950446342	3830-00-127-9413 END BIT	0	EA		122.48						

FAN MODULE DISCONNECT

BROKEN FAN DELAY SWITCHES ON HMMWVs DON'T LET THE RADIATOR FAN KICK IN AT 190° F LIKE THEY'RE SUPPOSED TO. THE ENGINE CAN'T KEEP COOL WITHOUT CIRCULATING AIR.

TO FIND OUT IF YOUR TRUCK'S HAS A BROKEN SWITCH, EYEBALL THE HMMWV's MODULE SWITCH AND THE VEHICLE'S SERIAL NUMBER. ON VEHICLES SERIAL NUMBERED 100000 THROUGH 112867, AND 68555 THROUGH 72541, LOOK FOR ADCO STAMPED ON TOP OF THE SWITCH. REPLACE THE ADCO SWITCH WITH A BETTER ONE, NSN 5945-01-193-7175. UNTIL YOU INSTALL THE NEW SWITCH, DISCONNECT THE ADCO MODULE FROM THE CONTROL VALVE CONNECTOR. THAT WAY, THE FAN WILL CONTINUE TO RUN, NO MATTER WHAT THE TEMPERATURE IS.

TACTICAL VEHICLES WINDOWS

WHEN YOU USE COMMERCIAL CLEANERS THAT COME IN AEROSOL CANS, THE PROPELLANTS CAN ETCH THE GLASS AND DAMAGE RUBBER SEALS. WHEN DOING REGULAR GLASS WINDOWS GET THE SOAP AND WATER TREATMENT, THEN A RINSE AND DRY.

PLASTIC WINDOWS REQUIRE A LITTLE MORE EFFORT. THOSE THAT ARE YELLOW, DISCOLORED OR SCRATCHED MAY NOT BE HELPED BY WASHING, BUT PUT THE SOAP AND WATER TO THEM AS ABOVE, ANYWAY. THEN APPLY HAND CLEANER, NSN 8520-00-782-3509. ONCE THE CLEANER IS DRY, WIPE IT OFF WITH ANOTHER CLEAN CLOTH.

IN SOME CASES, THIS CLEANER WILL REMOVE DISCOLORATION AND MINOR SCRATCHES.

FOR BALLISTIC GLASS USED ON ARMORED HMMWV'S APPLY PLASTIC POLISH, NSN 7930-00-935-3794, ONCE YOU'VE GOT THE WINDOWS CLEAN AND DRY WITH SOAP AND WATER AND HAND CLEANER. THE POLISH REMOVES LIGHT SCRATCHES.

IN ALL INSTANCES, STAY AWAY FROM PRODUCTS THAT CONTAIN AMMONIA.

NSN

HMMWV DISTRIBUTION BOX
THE NEW POWER DISTRIBUTION BOX AND CABLE ASSEMBLY, NSN 6110-01-446-7125, FOR HMMWVs IS NOW AVAILABLE SEPARATELY. GET THE DISTRIBUTION BOX WITH NSN 6110-01-446-7126 AND THE CABLE WITH NSN 6110-01-446-7124.

BLACKOUT MARKER
NSN 6220-01-343-1327 GETS THE FRONT BLACKOUT MARKER FOR M915A2 SERIES AND M916A1 SERIES TRACTORS.

M939 SPRING BRAKE MWO
IF YOUR M939 SERIES TRUCKS HAVE NOT HAD A REDESIGNED SPRING BRAKE CONTROL VALVE AND MOUNTING BRACKET APPLIED, YOU HAVE AN UNSAFE TRUCK. UNTIL THE MODIFICATION IS MADE, THE VALVE CAN BE ENGAGED BY ACCIDENT, CAUSING A LOSS OF CONTROL.
NSN 2530-01-286-7754 IS THE KIT REQUIRED.

WATER CAN LID
DON'T ORDER A NEW 5-GAL WATER CAN, NSN 7240-00-089-3827, IF ALL YOU NEED IS A LID. NSN 7240-00-089-7312 BRINGS YOU THE LID AND CAP ASSEMBLY.

M35A3 FUEL ELEMENT
DON'T BE CONFUSED BY THE KIT INFORMATION SHOWN FOR THE FUEL/WATER SEPARATOR ELEMENT FOR YOUR M35A3 TRUCK . THE ELEMENT, ITEM 3 OF FIG 36, IS NOT PART OF ANY KIT AND IS AVAILABLE WITH NSN 2910-01-363-3089. THE O-RINGS YOU NEED ARE ALSO AVAILABLE SEPARATELY. THEY ARE NSN 5331-00-579-6495 (ITEM 7) AND NSN 5331-01-333-6444 (ITEM 9).

GRIPPING COMPOUND
IF YOU'VE LOST YOUR GRIP ON A SCREW OR BOLT BECAUSE OF, STRIPPED OUT SCREW HEADS, ROUNDED CORNERS, WORN TOOL, OR BAD ANGLE ON THE FASTENER REACH FOR SOME GRIPPING COMPOUND.
A COUPLE OF DROPS ON A TOOL OR ON THE FASTENER COULD GIVE YOU THE GRIP YOU NEED TO TURN IT OUT OR OFF.
NSN 6850-01-420-9041 BRINGS A DOZEN 3-oz BOTTLES FOR AIR AND GROUND APPLICATIONS. NSN 6850-01-418-8759 BRINGS TWELVE 3-oz BOTTLES FOR UNDERWATER USE.

M915A1 BRAKE SHOE KIT
NSN 2350-01-437-3324 GETS A FRONT AXLE BRAKE SHOE KIT (INCLUDING LININGS) FOR THE M915A1 TRACTOR TRUCK.

M872A3 SEMITRAILER BRAKE SHOE KIT
NSN 2530-01-179-7640 GETS A BRAKE SHOE KIT FOR THE 34-TON FLATBED TRAILER. THE KIT INCLUDES TWO SHOES WITH LININGS AND EVERYTHING NEEDED TO DO A BRAKE JOB ON ONE WHEEL.

M172A1 SEMITRAILER BRAKE DRUM
NSN 2530-00-204-3214 GETS THE BRAKE DRUM FOR THE 25-TON SEMITRAILER.THE NSN IS MISSING FROM ITEM 20 FIG 16 IN THE MANUAL.

M149A2 WATER TRAILER TANK
ALL M149A2 WATER TRAILERS SHOULD NOW HAVE STAINLESS STEEL TANKS. IF YOUR TRAILER STILL HAS A FIBERGLASS TANK, TURN IN YOUR OLD TRAILER, AND REQUEST A TRAILER WITH THE STEEL TANK, NSN 2330-01-108-7367.

M870A1 TRAILER WRENCH, HANDLE
GET THE TRUCK WRENCH AND HANDLE FOR M870A1 TRAILERS WITH THESE NSNs:
TRUCK WRENCH --- NSN 5120-01-292-9849
WRENCH HANDLE --- NSN 5120-01-134-9422
THE PART NUMBER INFO FOR ITEMS 1 AND 2 ON PAGE C-3 IS WRONG, THE WRENCH IS TR9 AND THE HANDLE IS TR5.

M796 BOLSTER TRAILER SUPPORT ASSEMBLY
NSN 2590-01-186-5896 GETS THE RETRACTABLE SUPPORT ASSEMBLY FOR THE M796 BOLSTER TRAILER. IT'S THE SAME ASSEMBLY USED ON THE A1 MODEL SHOWN AS ITEM 1 IN FIG 21 OF THE MANUAL.

M900 SERIES TANKERS GREASE RETAINER
NSN 5330-00-933-4198 GETS THE GREASE RETAINER FOR THE 5,000-GAL FUEL TANKER'S HUB AND DRUM ASSEMBLY. THE PART INFO SHOWN FOR ITEM 8 IN FIG 32 OF THE MANUAL IS WRONG.

LARGE SHACKLES VS. SMALL HOOKS

AS MORE AND MORE TACTICAL VEHICLES GET HEAVIER TOWING SHACKLES TO MEET AIR TRANSPORT REGULATIONS, TRAILER SAFETY CHAIN HOOKS HAVE TO BE REPLACED. REPLACE THE OLD CHAIN HOOKS WITH HOOK, NSN 4030-01-438-1803. IT WORKS ON THE LARGER SHACKLES AND IS EASY TO INSTALL.

M870/M870A1 SEMITRAILERS

KEEP IN MIND WHEN REPLACING THE DECKING ON THE 40-TON LOWBED TO USE PURPLEHEART WOOD.

PURPLEHEART IS A TROPICAL WOOD THAT'S STRONGER AND MORE DURABLE THAN THE BOARDS YOU USE NOW. IT RESISTS BOTH ROTTING AND ULTRAVIOLET RAYS, AND REPELS WATER,REQUIRING LITTLE OR NO MAINTENANCE.

ORDER PURPLEHEART WITH NSN 5510-01-454-8568. THE UNIT OF ISSUE IS BOARD FEET (BF). EACH BOARD WILL MEASURE 16ft4in X 9 7/8in X 1 7/8in . EACH BOARD EQUALS 27.21 BF. THE MINIMUM ORDER IS 250BF, YOU NEED 325BF TO COMPLETELY RE-DECK ONE TRAILER.

PURPLEHEART IS A HARDER WOOD, SO A CARBIDE BLADE IS REQUIRED TO CUT IT, THE SAME GOES FOR DRILLING HOLES.

M939 EXHAUST CAP

KEEPING RAIN AND SNOW OUT OF M939 SERIES TRUCK EXHAUST STACKS IS A SNAP WITH WEATHERCAP, NSN 9390-01-204-1161.

AIR BRAKE GOVERNOR CHANGES

THERE HAVE BEEN TWO MANUFACTURES OF AIR BRAKE GOVERNOR ASSEMBLY, NSN 2530-00-854-4457, USED ON M939 SERIES AND M939A1 SERIES TRUCKS.

ONE ASSEMBLY, FL INDUSTRIES PART NUMBER N-20856-D, IS NO LONGER AVAILABLE. THE OTHER ASSEMBLY, ALLIED SIGNAL'S PART NUMBER 7003-03C068537, IS AVAILABLE AND INTERCHANGEABLE AS AN ASSEMBLY, BUT NOT IN PARTS.

DO NOT TRY TO MOUNT EITHER OF THESE ASSEMBLIES ON M939A2 SERIES TRUCKS. THEY DO NOT HAVE THE LOW PRESSURE CUTOFF FOR CTIS THAT RESERVES AIR PRESSURE FOR BRAKING IN CASE OF AIR SYSTEM FAILURE. YOU MUST USE ASSEMBLY, NSN 2530-01-287-4529 (PN 106400) FOR A2 SERIES VEHICLES.

Technical Service Information

INTERNATIONAL

This TSI replaces 96–02–01

Subject: Steer Axle Alignment Specifications

DESCRIPTION

Steer axle alignment specifications and range for International vehicles are listed below as a handy reference for your service facility.

STEER AXLE ALIGNMENT SPECIFICATIONS

Toe-In For All Steer Axles

Table 1 Toe-In For All Steer Axles

ACCEPTABLE SERVICE RANGE - Unloaded:		
0 to 1/8 Inch	0 to .125 Inch	0 to .180 Degree
If out of acceptable service range - Unloaded, reset to:		
1/32 to 3/32 Inch	.03 to .09 Inch	.05 to .13 Degree

Camber (Camber Range) and King Pin Inclination (KPI)

Table 2 Camber (Camber Range) and King Pin Inclination (KPI)

Axle		Degrees		
		Camber	Camber Range	KPI
International by Spicer 02ADA (I60S), 02ADB (I80S)	Left	1/2	(0 to 1)	(4 1/4 KPI)
	Right	1/4	(-1/4 to +3/4)	(4 1/2 KPI)
International by Spicer* 02ADC (I100S), 02ADD (I120S), 02ADE (I140S), 02ADG (I120S)	Left	0	(±7/16)	(7 3/4 KPI)
	Right	0	(±7/16)	(7 3/4 KPI)
Eaton 02AEA (EFA-13.2), 02AED (E1200I), 02AEG (E1320I), 02250 (EFA-12)	Left	1/2	(1/16 to 15/16)	(5 1/4 KPI)
	Right	0	(±7/16)	(5 3/4 KPI)

STEER AXLE ALIGNMENT SPECIFICATIONS (CONT.)

Table 2 Camber (Camber Range) and King Pin Inclination (KPI) (cont.)

Axle		Degrees		
		Camber	Camber Range	KPI
Rockwell* 02ARA (FF961), 02ARK (FF981), 02ARL (FF982), 02227 (FF941)	Left	(-1/4)	(±7/16)	(6 1/4 KPI)
	Right	(-1/4)	(±7/16)	(6 1/4 KPI)
International by Spicer* 02ADH (I160S), 02ADJ (I180S), 02ADK (I200S)	Left	0	(±7/16)	(6 1/4 KPI)
	Right	0	(±7/16)	(6 1/4 KPI)
Rockwell* 02231 (FL941), 02232 (FL941), 02233 (FL941)	Left	(-1/4)	(±7/16)	(6 1/4 KPI)
	Right	(-1/4)	(±7/16)	(6 1/4 KPI)
*Prior to September 1992, Rockwell left camber (at rated load) was 1/2 degree. Prior to July 1993, International by Spicer left camber was 1/2 degree.				

CAMBER is predrilled in the I-beam by axle suppliers, and within the above ranges, and is not an issue in tire tread life or handling on North American highways. COLD INFLATION and TOE-IN are the prime factors in tread life.

None of our axle suppliers or Navistar approves of adjusting camber by bending I-beams.

Caster Range For International Truck Models

Table 3 Caster Range For International Truck Models

Chassis Model(s)	Axle Code(s)	Caster Range in Degrees
1000, 2000, 3000, 4000, 7000, 8100	02ADA, 02ADB	2 to 3
	02ADC, 02ADD, 02ADP	1 1/2 to 2 1/2
	02ADE	3 to 4
	02ADH, 02ADJ, 02ADK, 02231, 02232, 02233	2 3/4 to 3 3/4
	02EYB, 02EYG, 02EYH, 02EYW, 02EYX, 02064	2 to 3
Paystar (5000), CO-5870	02ADH, 02ADJ, 02ADK, 02231, 02232, 02233	3 to 4

STEER AXLE ALIGNMENT SPECIFICATIONS (CONT.)

Table 3 Caster Range For International Truck Models (cont.)

Chassis Model(s)	Axle Code(s)	Caster Range in Degrees
8200, 8300, 8100CH	02ADD, 02ADE	3 to 4
	02ADG	1 1/2 to 2 1/2
	02AEA, 02AED, 02AEG, 02250	2 1/2 to 3 1/2
	02ARA, 02ARK, 02ARL, 02227	2 1/2 to 3 1/2
9200, 9370, 9370SBA, 9400 Conventional	02ADD, 02ADE, 02ADP	4 to 5 1/2
	02AEA, 02AED, 02AEG, 02250	4 to 5 1/2
	02ARA, 02ARK, 02ARL, 02227	4 to 5 1/2
	02ADH, 02231	3 1/2 to 4 1/2
	02ADJ, 02232	4 1/2 to 5 1/2
9670 CabOver, 9800 SFA	02ADD, 02ADE	2 1/2 to 4
	02AEA, 02AED, 02AEG, 02250	2 1/2 to 4
	02ARA, 02ARK, 02ARL, 02227	2 1/2 to 4
	02ADH, 02231	3 1/2 to 4 1/2
	02ADJ, 02232	4 1/2 to 5 1/2
9700 CabOver SBA, 9800 SBA	02ADD, 02ADE	2 1/2 to 4
	02AED, 02AEG, 02ARA, 02ARK, 02ARL, 02227	2 1/2 to 4
3900FC, 3000 RE	02ADD, 02ADE	1 1/2 to 2 1/2
CASTER may vary 1/2 degree side to side.		
CASTER is controlled by factory installed wedges between the springs and axle. Caster set too low for a specific vehicle may result in wander or returnability complaints.		

NOTE – TSI-93-14-01 covers rear axle alignment.

Technical Service Information

INTERNATIONAL

Subject: Coolant Filter Header Assembly

Engine Family: DT 408

Engine Family: DT 466

Engine Family: DT 466 High Torque

Engine Family: DT 466E

Engine Family: DT 466E High Torque

Engine Family: International® 530

Engine Family: International® 530E

Engine Family: International® 530E High Torque

DESCRIPTION

COOLANT FILTER HEADER ASSEMBLY

A new coolant filter header featuring a manual shut off valve will replace the existing filter header that utilizes check valves to contain engine coolant whenever the filter is removed. This is designed to minimize any potential loss of coolant when servicing the filter.

Redesigned Coolant Filter Header Assembly

The redesigned coolant filter header assembly has been released for use in all NGD I-6 diesel engines, replacing the existing coolant filter header assembly. The redesigned header assembly, located on the right side of the engine behind the front cover, will incorporate a manual shut off valve instead of the current filter header utilizing (2) check valves. This will aid service technicians by minimizing the possibility that the check valves may not seat properly, resulting in lost engine coolant.

The new coolant filter header assembly (P/N 1827689C91) will replace the discontinued coolant filter header assembly (P/N 1820381C93, discontinued in both production and service parts). There will be no changes made to any existing related components such as bolts, gaskets, or the filter itself. This production change will occur with 1999 Model Year engines, bearing serial number 117199 and higher.

Figure 1 New Coolant Filter Header Assembly With Valve Lever In The Off Position

1. Manual Filter Shut Off Valve Lever (OFF Position, Filter Bypassed)

⚠ WARNING – TO AVOID PERSONAL INJURY USE ONLY THE FOLLOWING PROCEDURE TO REMOVE THE PRESSURE TYPE CAP FROM THE COOLING SYSTEM. ALWAYS ALLOW THE ENGINE TO COOL FIRST. WRAP A THICK, HEAVY CLOTH AROUND THE CAP. PUSH DOWN, LOOSEN CAP SLOWLY TO ITS FIRST NOTCH POSITION; THEN PAUSE A MOMENT. THIS WILL AVOID POSSIBLE SCALDING BY HOT WATER OR STEAM. CONTINUE TO TURN CAP TO THE LEFT AND REMOVE.

To Replace The Coolant Filter:

1. Turn the manual shut off valve lever to the"OFF" position (See Figure 1, page 2).
2. Remove the deaeration tank pressure cap and then remove the coolant filter using a filter wrench/strap.
3. Apply a thin coat of coolant to the filter gasket and install onto the filter header.
4. Tighten until the gasket touches the coolant filter header. Tighten by hand one (1) additional full turn.
5. After the servicing operation is complete, check coolant level and replace the pressure cap. Be certain to turn the manual filter shut off valve back to the "ON" position, so that the filter will once again be operational, extending the service life of the coolant as well as the engine.

Refer to New Coolant Filter Header Assembly (Valve In The On Position) (See Figure 2

Figure 2 New Coolant Filter Header Assembly With Valve Lever In The On Position

1. Manual Filter Shut Off Valve Lever (ON Position, Filter Operational)

NOTE – A copy of this service bulletin should be filed with the following publications until they have been updated to include this change:

ENGINE SERVICE MANUAL (Form No. EGES 105-1)

ENGINE SERVICE MANUAL (Form No. EGES 160-1)

ENGINE OPERATION AND MAINTENANCE MANUAL, DT-466 (Form No. 1171667R4)

ENGINE OPERATION AND MAINTENANCE MANUAL, DT-466E, (equipped with International Diamond Logic™ Electronic Control Module) (Form No. 1171734R1)

ENGINE OPERATION AND MAINTENANCE MANUAL, THE INTERNATIONAL 530 (Form No. 1171668R4)

ENGINE OPERATION AND MAINTENANCE MANUAL, THE INTERNATIONAL 530E (equipped with International Diamond Logic™ Electronic Control Module) (Form No. 1171735R1)

Technical Service Information

INTERNATIONAL

Subject: Missing Bolts in "Barry" Engine Mounts

Truck Model: 2000

Truck Model: 4900

Truck Model: 8100

DESCRIPTION

The Barry engine mounts on 2000, 4900 6 x 4, and 8100 Models with International I-6, Caterpillar, Cummins and Detroit Diesel engines require four 3/8 inch bolts that thread into the lower "V" insulator block (Figure 1). To achieve maximum insulator life, these bolts should be in place and properly tightened. These bolts should be checked during regular preventive maintenance inspections and any missing bolts replaced.

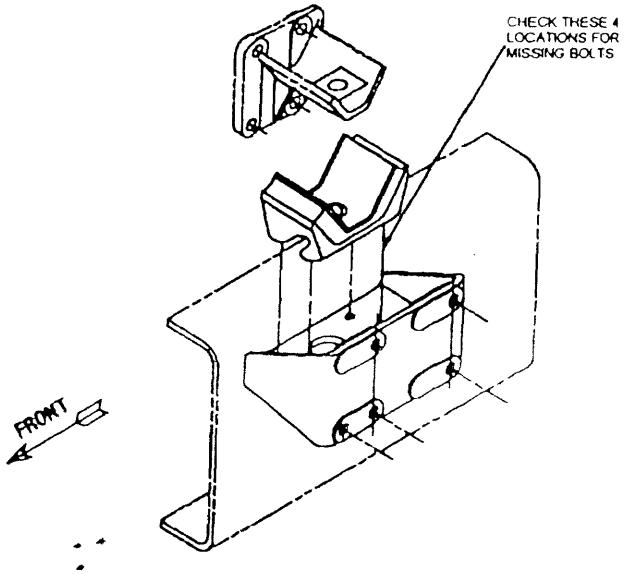


Figure 1 Check for Missing Bolts

PREVENTIVE MAINTENANCE PROCEDURE

1 From the vehicle underside, inspect the rear left and right engine mounts for missing bolts (Figure 1).

2 If any bolts are missing, replace with bolt part number 26311R1 and flat washer part number 25709R1

3 Tighten the replacement bolts to 34 to 38 ft lbs. (46 to 52 Nm)

New Pressure Switches with Improved Reliability

1435-BRK

**CH65E (6GS),
CH75E (6HS),
CH85E (6JS),
CH95E (6KS) Agricultural Tractors;
824G (4SN) Wheel Tractor;
825G (6RN) Soil Compactor;
826G (7LN) Landfill Compactor;
844 (2KZ),
854G (1JW),
918F (2CK, 3TJ, 5DL),
924F (4YN, 5NN, 6MN, 7PN),
928F (2XL, 8AK),
938F (1KM, 2RM, 7SN, 8SM),
938G (4YS, 6WS, 8RS, 9HS),
950G (2JS, 3JW, 4BS, 6NS, 5MW, 5FW, 8JW),
962G (4PW, 3BS, 6HW, 5RS, 5AS, 6EW, 7BW),
966G (3PW, 3SW, 3ZS, AAH, 8XW, 9RS),
972G (1EW, 4WW, 6AW, 9GW, AAW, 7LS),
980G (2KR, 2SR, 9CM),
988F (8YG),
988F Series II (2ZR),
990 (7HK),
990 Series II (4FR),
992G (7HR),
994D (3TZ) Wheel Loaders;
IT18F (5EJ, 6ZF),
IT24F (4NN, 6KN),
IT28F (1JL, 3CL),
IT38F (5DR, 6FN),
IT38G (1CW, 7BS),
IT62G (6PS) Integrated Toolcarriers**

Description Of Change: New, more reliable pressure switches are available for brake oil pressure and parking brake oil pressure monitoring.

Adaptable To: The new switches are direct replacements for the former switches.

Table 3 - Table Title

Application	Part Name	Former	New
Brake Oil Pressure	Pressure Switch	3E-7693	175-3244
Parking Brake Oil Pressure	Pressure Switch	3E-6452	174-4312
Parking Brake Oil Pressure	Pressure Switch	9W-2653	175-3245

■

New Parking Brake Limit Switch Now Used

1435

**844 (2KZ),
854G (1JW) Wheel Tractor;
988F (8YG),
988F Series II (2ZR),
990 (7HK),
990 Series II (4FR),
992D (7MJ),
992G (7HR) Wheel Loader**

Description Of Change: A new parking brake limit switch is now available. The new brake limit switch features a stronger return spring. This return spring will prevent binding of the switch plunger which results from debris entering the switch.

Adaptable To: The 171-7085 Limit Switch is a direct replacement for former 3E-5181 Limit Switch. The former switch may still be ordered for use in other applications where the greater spring force is not required. The following is a partial list of models that already have the new limit switch.

Partial Effectivity	
Model	Serial Number Range
992G	7HR00339-Up
990 Series II	4FR00391-Up
988F Series II	2ZR01803-Up
854	1JW00238-Up
844	2KZ00301-Up

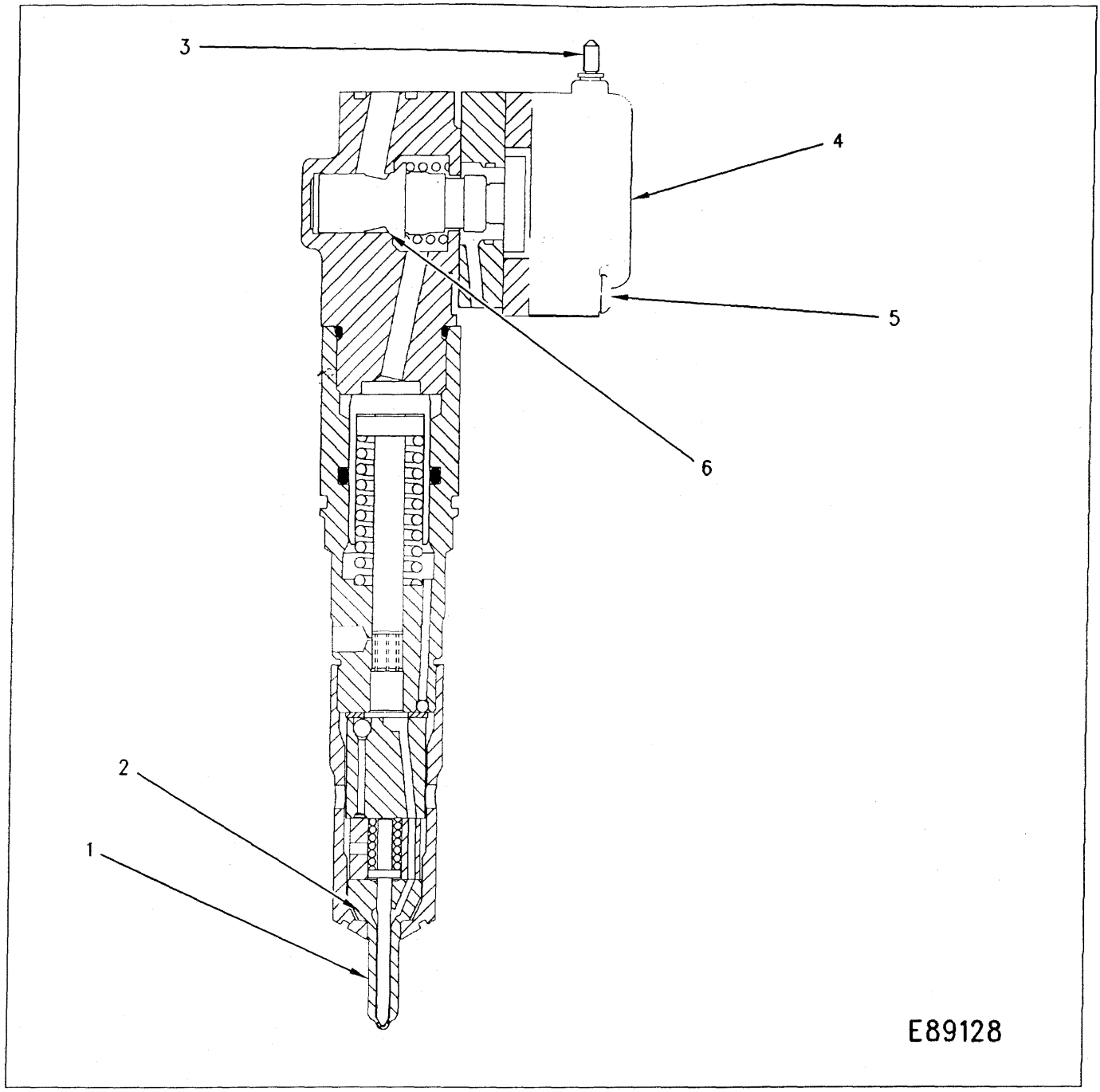
■

New Injector Is Now Available

1290

**988F (2ZR1572-Up),
990 (4FR372-Up) Wheel Loaders;
834B (7BR662-Up),
844 (2KZ) Wheel Tractors;
631E Series II (1AB1842-Up, 1NB1433-Up),
633E Series II (2PS314-Up),
637E Series II (1FB7756-Up),
651E (4YR221-Up),
657E (5YR283-Up, 6PR103-Up, 6TR215-Up, 7KR232-Up) Scrapers**

Description Of Change: Several improvements have been made to increase the reliability of the unit injectors used in the 3408E and 3412E Engines. The new 174-7526 Injector has improvements to address the following problems:



Lower Portion of Nozzle Tip (1). Nozzle Tip at End Of Nozzle Case (2). Terminal Post (3). Solenoid (4). Armature Screw (5). Lower Poppet Seat (6).

1.) Nozzle tip splitting due to tip fatigue.
2.) Nozzle tip breakage due to side load from improper installation.
3.) Solenoid post loosening due to vibration.
4.) Solenoid failure due to internal shorting.
5.) Armature screw loosening due to manual torque control.
6.) Low power complaints due to cavitation erosion of the injector lower poppet seat.

1.) Nozzle tip splitting due to fatigue was observed on some early engines. This failure typically resulted in the tip splitting through an orifice hole and piece of the tip near the end breaking out. This problem was eliminated through several design and process changes which increased the tip wall strength and reduced the check impact at the end of injection. Tip strength has been increased by using a thicker tip wall. Check impact load has been reduced by a design change to increase the check damping and to reduce the check lift.

2.) Nozzle tip breakage where the entire shank portion of the tip breaks off near the end of the nozzle case has been seen on some field-replaced injectors. This is a result of side-loading on the tip at injector installation, which occurs when carbon deposits in the tip hole of the injector sleeve are not properly removed. This problem has been addressed by implementing a new plug gauge which is used prior to installing the injector, and ensures that adequate clearance is available at the point of use. In addition, a new cleaning brush was released to facilitate cleaning the hole, instructions were improved, and a special warning wrapper (with international symbols) was affixed to each service injector to alert the installer to the proper procedures. New packaging was also implemented to better protect service injectors during shipping and handling.

3.) Solenoid post loosening can occur due to fatigue from prolonged engine vibration. The original containment action to reduce the effect of the vibration was to add a rubber grommet to reduce terminal post movement. The permanent corrective action was to add additional epoxy material to the post. This provides a significant increase in strength and eliminates the need for the rubber grommet.

4.) Solenoid failure due to internal shorting was caused by frayed wire insulation from prolonged exposure to engine vibration. This problem was addressed by using wire with a bondable insulation. This new insulation is heat bonded with insulation from adjacent wires forming a single mass that is much stronger and vibration resistant.

5.) Armature screw loosening occurred to some injectors due to a manual torquing process used during assembly. This manual process has been eliminated and replaced by a computer controlled automated torquing process. The new automated process assures the correct clamping load on the armature to prevent armature screw loosening.

6.) Low power complaints due to cavitation leakage of the injector lower poppet seat has been addressed through new software to reduce actuation pressure during high speed, low fuel delivery conditions. Excessive actuation pressure at low fuel rate conditions cause a vacuum bubble to form at the lower poppet seat when the poppet closes. Continued exposure to the implosion of the vacuum bubbles eventually causes cavitation damage to the lower poppet seat. This damage allows excessive leakage of actuation pressure, low fuel delivery and a low power complaint.

Adaptable To: The new 174-7526 Injector is a direct replacement for the former 159-0835, 138-8754, and 131-3098 Injectors on the engines in the above machines. The former injectors have been canceled. ■

Steering System Changes Improve Steering Operation

4307

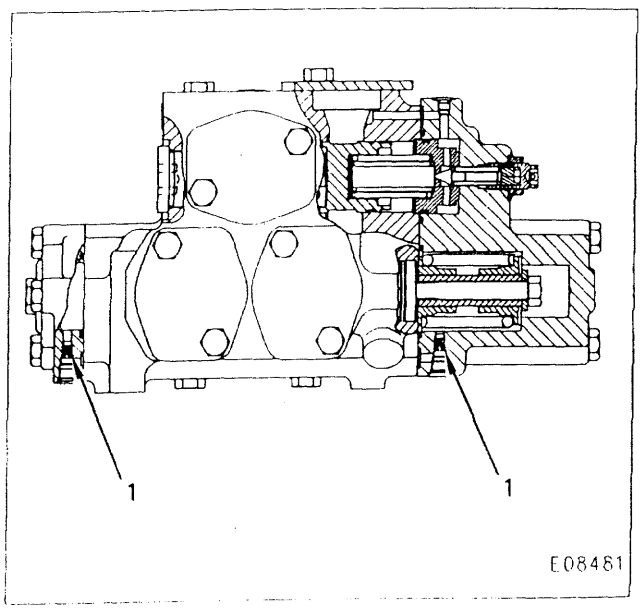
988F (2ZR) Wheel Loader

Description Of Change: A new steering control valve has replaced the former steering control valve in the STIC steering system. The check valve in the steering pilot system has also been changed.

The new steering control valve and new check valve reduces machine jerk when steering is initiated, making steering smoother and more controllable.

Adaptable To: Effective with 988F (2ZR563), the new 139-5270 Steering Control Valve replaced the former 128-5347 Steering Control Valve, and is adaptable to earlier machines. Also, a new 111-7775 Check Valve replaced the former 6E-3723 Check Valve.

Effective with 988F (2ZR988), a new 149-4617 Check Valve replaced the 111-7775 Check Valve and is adaptable to earlier machines.



New 139-5270 Steering Control Valve
(1) 4T-4207 Orifice Plug

The former 128-5347 Steering Control Valve can be upgraded to the new 139-5270 Steering Control Valve by replacing the 4J-9780 Orifice Plug in the end covers with 4T-4207 Orifice Plug (1).

Note: If the 128-5347 Steering Control Valve is upgraded, the former 6E-3723 Check Valve must be replaced with the new 149-4617 Check Valve. ■

Decelerator Adjustment for Track-Type Tractors and Pipelayers

1276

**D5M (4BR, 3CR, 3DR, 6GN),
D6H (6CK, 6FC, 9KJ, 5KK, 4RC, 3YG, 3ZF, 8ZJ),
D6M (4JN, 2RN, 3WN,9ZM),
D6R (6JN, 7KN, 5LN, 8LN, 4MN, 9PN, 2YN, 3ZN),
D7H (5BF, 4FG, 77Z, 79Z, 80Z),
D7R (3DN, 2EN, 2HR, 9HM),
D8N (9TC, 5TJ, 1XJ),
D8R (7XM),
D9H (90V),
D9N (6XJ),
D9R (8BL, 7TL),
D10N (3SK, 2YD),
D10R (3KR),
D11N (4HK, 74Z),
D11R (9TR, 9XR, 8ZR) Track-Type Tractors;
561M (1KW),
572R (2HZ) Pipelayers**

Accurate decelerator adjustment is required for proper operation of the machine systems, electrical systems and power train.

The decelerator adjustment is a part of the governor and brake control or the governor and decelerator control (H models) for non-HEUI engine machines. It is part of the decelerator control for machines with the HEUI engine.

Decelerator Adjustment Chart		
Model	**Decel (RPM)**	**Tolerance (RPM)**
D11R	1000	± 50
D10R	1000	± 30
D9R/CB[1]	1000	± 30
D9R/DS[2]	1000	± 50
D8R	1000	± 50
D7R	1000	± 50
D6R	900	± 50
D6M	1000	± 50
D5M	1000	± 50
D11N	1000	± 50
D10N	1000	± 30
D9N	1000	± 30
D8N	1000	± 50
D9H/CB	1000	± 30
D9H/DS	1000	± 50
D7H	1000	± 50
D6H	900	± 50
561M	1000	± 50
572R	1000	± 50

[1] Clutch brake
[2] Differential steering

Decelerator Pedal Adjustment Procedure

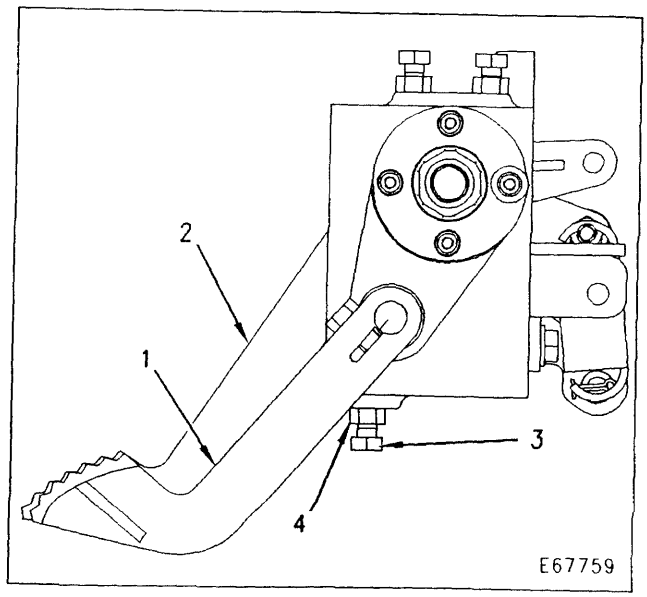


Illustration 1. Decelerator adjustment (typical) for machine with non-HEUI engine - current models.
(1) Decelerator pedal
(2) Brake pedal
(3) Setscrew
(4) Nut

Note: The following procedure is for machines with non-HEUI engines.

1. Start the engine and run at HIGH IDLE. Depress decelerator pedal (1) until the engine speed is in the specified range for the particular model that is noted in the chart. Adjust setscrew (3) inward until the setscrew comes in contact with the governor lever inside the brake pedal. Tighten locknut (4) in order to keep the setscrew in place.

2. Bring the engine speed back to LOW IDLE with the governor control lever and then increase to the HIGH IDLE position.

3. Depress decelerator pedal (1) to stop and check RPM. If the engine speed is not correct, repeat Step 1. When the engine is running at the correct decelerator RPM, lock the setscrew in place.

Note: The following procedure is for machines with HEUI engines.

1. With dimension (A) set at 15 mm (.6 inch), adjust decelerator pedal (1) on splined shaft (6) to position tread surface to dimension (B), 242 ± 17 mm (9.5 ± .7 inch). Lock bolt (7) in place.

2. With the engine running at HIGH IDLE, screw in and lock decelerator RPM setscrew (4) so that engine speed is in the specified range for the particular model that is noted in the chart when the decelerator pedal is depressed.

3. With the decelerator pedal released, check HIGH IDLE RPM against the initial high idle reading. Screw in and lock setscrew (2) to allow 5 ± 3 mm (.2 ± .1 inch) free play at the end of the decelerator pedal.

1. With the engine running, move governor control lever (2) to HIGH IDLE. Verify correct HIGH IDLE RPM. Adjust as necessary.

2. Depress decelerator pedal (1) until the engine speed is in the specified range that is noted in the chart. Adjust and lock decelerator RPM bolt (3).

3. Bring the engine speed back to LOW IDLE with the governor control lever and increase to the HIGH IDLE position.

4. Depress decelerator pedal to stop and check RPM. If the engine speed is not correct, repeat Step 2. When the engine is running at the correct decelerator RPM, lock the decelerator RPM bolt in place.

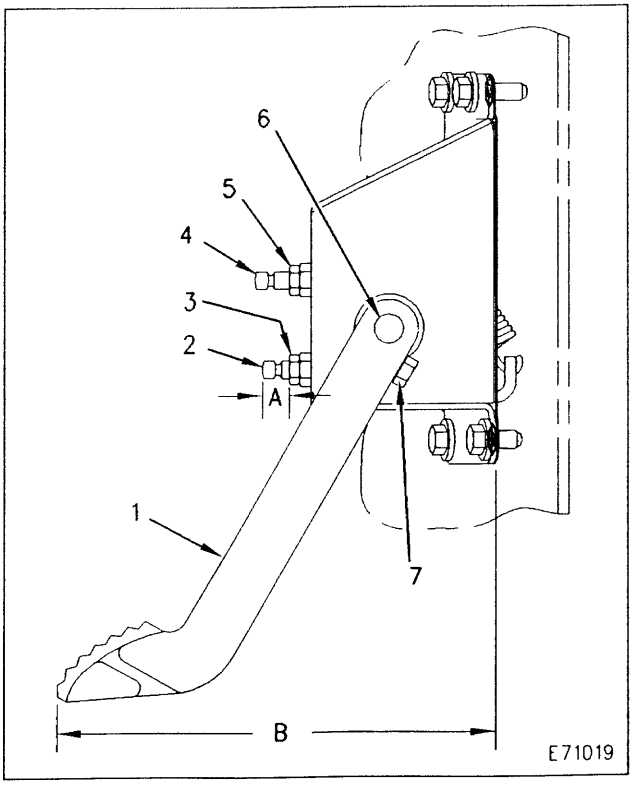


Illustration 2. Decelerator adjustment for machine with HEUI engine.
(1) Decelerator pedal
(2) Pedal stop setscrew
(3) Nut
(4) Decelerator RPM setscrew
(5) Nut
(6) Splined shaft
(7) Pedal lock bolt
(A) Pedal stop setscrew dimension
(B) Pedal end to dash plate dimension

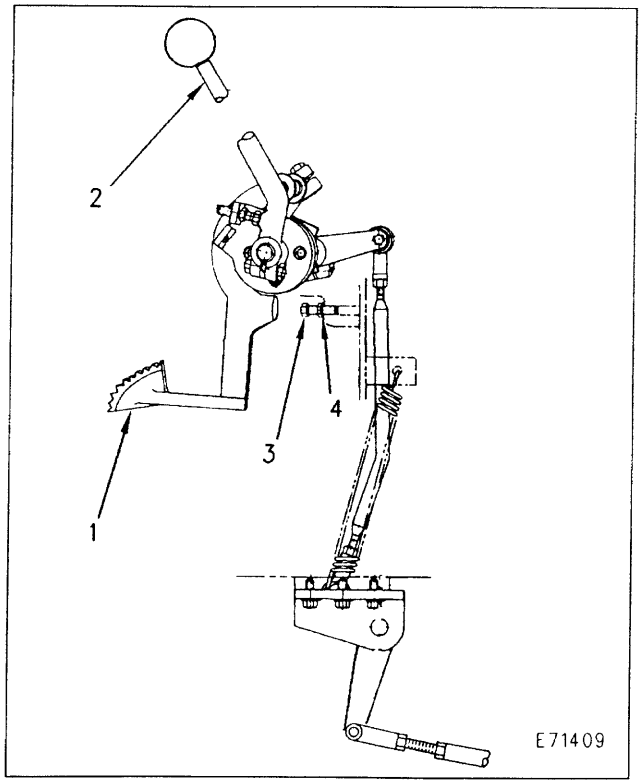


Illustration 3. Decelerator adjustment (typical) for H model machines.
(1) Decelerator pedal
(2) Governor lever
(3) Decelerator RPM bolt
(4) Nut

Snap Ring Improves Rod Wiper Seal Retention

4303, 5101, 5102, 5104, 5213

Description Of Change: A snap ring now retains the rod wiper seal in steering, angle, lift, tilt, and scarifier cylinders listed in this article. The snap ring prevents the rod from pulling the wiper seal out, especially during cold weather.

View A. Typical of Cylinders Using Later 9T-7350 Head With Snap Ring Groove.

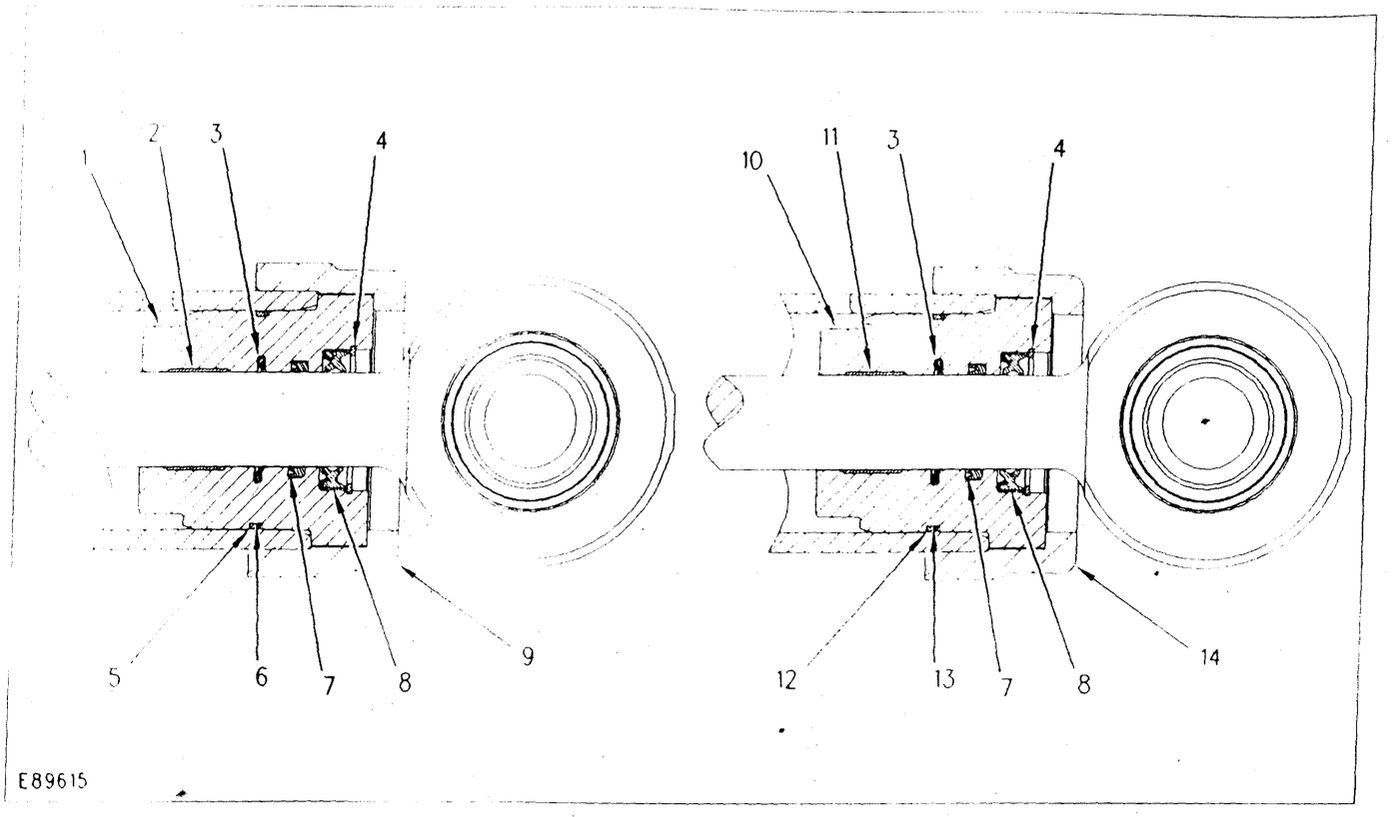
(1) 9T-7350 Head
(2) 8T-5443 Wear Ring
(3) 8C-9122 Seal Assembly
(4) 006-8663 Ring (Snap)
(5) 5H-8848 O-Ring Seal
(6) 6J-5731 Backup Ring
(7) 5J-8150 U-Cup Seal
(8) 8C-9131 Lip Seal
(9) 8J-5911 Crown

Note: Lubricate head OD and crown ID and tighten crown to 600 ± 130 N•m (440 ± 95 lb ft).

View B. Typical of Cylinders Using Later 9T-7346 Head With Snap Ring Groove.

(3) 8C-9122 Seal Assembly
(4) 006-8663 Ring (Snap)
(7) 5J-8150 U-Cup Seal
(8) 8C-9131 Lip Seal
(10) 9T-7346 Head
(11) 4T-6780 Wear Ring
(12) 2H-3931 O-Ring Seal
(13) 4J-9224 Backup Ring
(14) 7J-9877 Crown

Note: Lubricate head OD and crown ID and tighten crown to 600 ± 130 N•m (440 ± 95 lb ft).



Adaptable To: 006-8663 Ring (4) was effective with the engineering change number for cylinders listed in Chart A.

Note: An engineering change number (Eng. Chg.) indicates effectivity of this improvement or adaptability to earlier cylinders. The cylinder part number, engineering change number, and date of manufacture are on the cylinder tag.

Chart A

Part No.	(Eng. Chg)	Description	Models
1U-3322	04	Steering Cylinder	G916 (5GD) 916 (2XB, 9WB 3SC, 5KC) IT18 (9NB, 7ZB) IT18B (4ZD, 1DF, 2NJ) IT28B (5SD)
3G-3501	09	Steering Cylinder	926 (4NB, 8NB, 4TC, 7TC, 94Z) IT28 (8JB, 2CK) IT28B (5SD, 1HF, 1JK)
4T-0862	03	Lift Cylinder	508 (9NC, 2HD)
4T-9394	03	Lift Cylinder	508 (9NC, 2HD)
7J-9223	11	Lift Cylinder	D3 (06N, 79U, 82U, 83U) D3B (3YC, 5MC, 23Y, 24Y, 27Y, 28Y) D3C (5KG, 5ZG, 7JG, 8DG, 3RF, 6PF, 7JF, 8BF, 1PJ, 4HJ, 5CL, 7XL, 8DL, 9CL, 4KS, 4TS, 5GS, 5NS, 7GS, 9TS) D4B (2XF, 1SG)
8J-7321	06	Steering Cylinder	12G (61M) 120G (87V) 130G (74V) 140G (72V)
9J-8674	06	Tilt Cylinder	D3 (06N, 79U, 82U, 83U) D3B (3YC, 5MC, 23Y, 24Y, 27Y, 28Y) D3C (5KG, 5ZG, 7JG, 8DG, 3RF, 6PF, 7JF, 8BF, 1PJ, 4HJ, 5CL, 7XL, 8DL, 9CL, 4KS, 4TS, 5GS, 5NS, 7GS, 9TS) D4B (2XF, 1SG) D4C (7KG, 9BG, 1RJ, 2CJ, 6YL, 8EL, 4LS, 6BS, 6FS, 7NS, 8CS, 1FW) D5C (6PJ, 3MK, 6ZL, 7YL, 9DL, 4WS, 5HS, 6CS, 7PS, 8ZS)
136-3155	02	Angle Cylinder	D3C (6SL)

E89616

136-3156	02	Angle Cylinder	D3B D3C D4B D4C D5C	(3YC, 5MC, 23Y, 24Y, 27Y, 28Y) (5KG, 5ZG, 7JG, 8DG, 3RF, 6PF, 7JF, 8BF, 1PJ, 4HJ, 5CL, 7XL, 8DL, 9CL, 4KS, 4TS, 5GS, 5NS, 7GS, 9TS) (2XF, 1SG) (7KG, 9BG, 1RJ, 2CJ, 6YL, 8EL, 4LS, 6BS, 6FS, 7NS, 8CS, 1FW) (6PJ, 3MK, 6ZL, 7YL, 9DL, 4WS 5HS, 6CS, 7PS, 8ZS)
138-6859	06	Angle Cylinder	D3C	(6SL, 9TS)
139-0548	06	Angle Cylinder	D3C	(6SL, 7XL, 6YL, 4KS, 4LS, 4TS, 5GS, 5HS, 6BS, 6CS, 7GS, 7NS, 7PS, 8CS, 9TS, 1FW, 8ZS
141-2915	04	Lift Cylinder	D3C	(6SL, 7XL, 6YL, 4KS, 4LS, 4TS, 5GS, 5HS, 6BS, 6CS, 7GS, 7NS, 7PS, 8CS, 9TS, 1FW, 8ZS
143-7219	01	Tilt Cylinder	D3C	(6SL, 7XL, 6YL, 4KS, 4LS, 4TS, 5GS, 5HS, 6BS, 6CS, 7GS, 7NS, 7PS, 8CS, 9TS, 1FW, 8ZS

006-8663 Ring (1) is adaptable to earlier cylinders, without snap ring groove, as follows:

For cylinders with earlier 9T-7350 Head, see Chart B.

- Replace earlier 9T-7350 Head with later 9T-7350 Head (1) with snap ring groove.
- Install 006-8663 Ring (4).

Chart B

Part No.	(Eng. Chg)	Description	Models
1U-3322	03	Steering Cylinder	Chart A
3G-3501	08	Steering Cylinder	Chart A
4T-0862	02	Lift Cylinder	Chart A
4T-9394	02	Lift Cylinder	Chart A
8J-7321	05	Scarifier Cylinder	Chart A
138-6859	00-05	Angle Cylinder	Chart A
139-0548	00-05	Angle Cylinder	Chart A

E89617

For cylinders with former 8J-0556 Head, see Chart C.

- Replace former 8J-0556 Head with later 9T-7350 Head (1) with snap ring groove.
- Install 8T-5443 Wear Ring (2).
- Install 006-8663 Ring (4).

Chart C

Part No.	(Eng. Chg)	Description	Models
1U-3322	00-02	Steering Cylinder	Chart A
3G-3501	08-07	Steering Cylinder	Chart A
4T-0862	00-01	Lift Cylinder	Chart A
4T-9394	00-01	Lift Cylinder	Chart A
8J-7321	00-04	Scarifier Cylinder	Chart A

E89618

For cylinders with earlier 9T-7346 Head, see Chart D.

- Replace earlier 9T-7346 Head with later 9T-7346 Head (1) with snap ring groove.
- Install 006-8663 Ring (4).

Chart D			
Part No.	(Eng. Chg)	Description	Models
7J-9223	08-10	Lift Cylinder	Chart A
9J-8674	00-05	Tilt Cylinder	Chart A
136-3155	00-01	Angle Cylinder	Chart A
136-3156	00-01	Angle Cylinder	Chart A
141-2915	00-03	Lift Cylinder	Chart A

E89619

For cylinders with former 7J-9888 Head, see Chart E.

- Replace former 7J-9888 Head with later 9T-7346 Head (1) with snap ring groove.
- Install 4T-6780 Wear Ring (2).
- Install 006-8663 Ring (4).

Chart E			
Part No.	(Eng. Chg)	Description	Models
7J-9223	00-07	Lift Cylinder	Chart A
9J-8674	00-02	Tilt Cylinder	Chart A

E89620

■

Effective Engineering Change Numbers for Tilt Cylinders		
Tilt Cylinder	Eng. Chg.	Model
9J-8802	(13)	8A (05Y, 27B) D8L (53X, 7YB, 7JC)
3G-5707	(08)	8S (04Y) D8L (53X, 7YB, 7JC) D9N (1JD, 6XJ) D9R (7TL, 8BL)
6E-1175	(04)	D8N (5TJ, 7TK) D8R (7XM, 9EM)
6E-4835	(06)	D9N (1JD, 6XJ) D9R (8BL)
6E-4836	(06)	D9N (1JD, 6XJ) D9R (8BL)
4Z-6170	(01)	D9R (7TL, 8BL)
4Z-6311	(02)	D8R (7XM)
109-6778	(02)	D9R (7XM, 8BL)
109-8832	(03)	D9R (7TL, 8BL)
109-8833	(03)	D9R (7TL, 8BL)

E89779

Note: An engineering change number (Eng. Chg.) indicates effectivity of this improvement or adaptability to earlier cylinders. The cylinder part number, engineering change number, and date of manufacture are on the cylinder tag.

Tilt cylinders with change number below the listed change numbers, can be upgraded in one of two ways:

1. Install rod having new 7J-3297 Bearing (2) and 3B-8489 Grease Fitting (1).
2. Rework existing rod by replacing former 6V-3340 Bearing with new 7J-3297 Bearing (2) and installing 3B-8489 Grease Fitting (1). See illustration for location of lubrication hole, and drill and tap specifications.

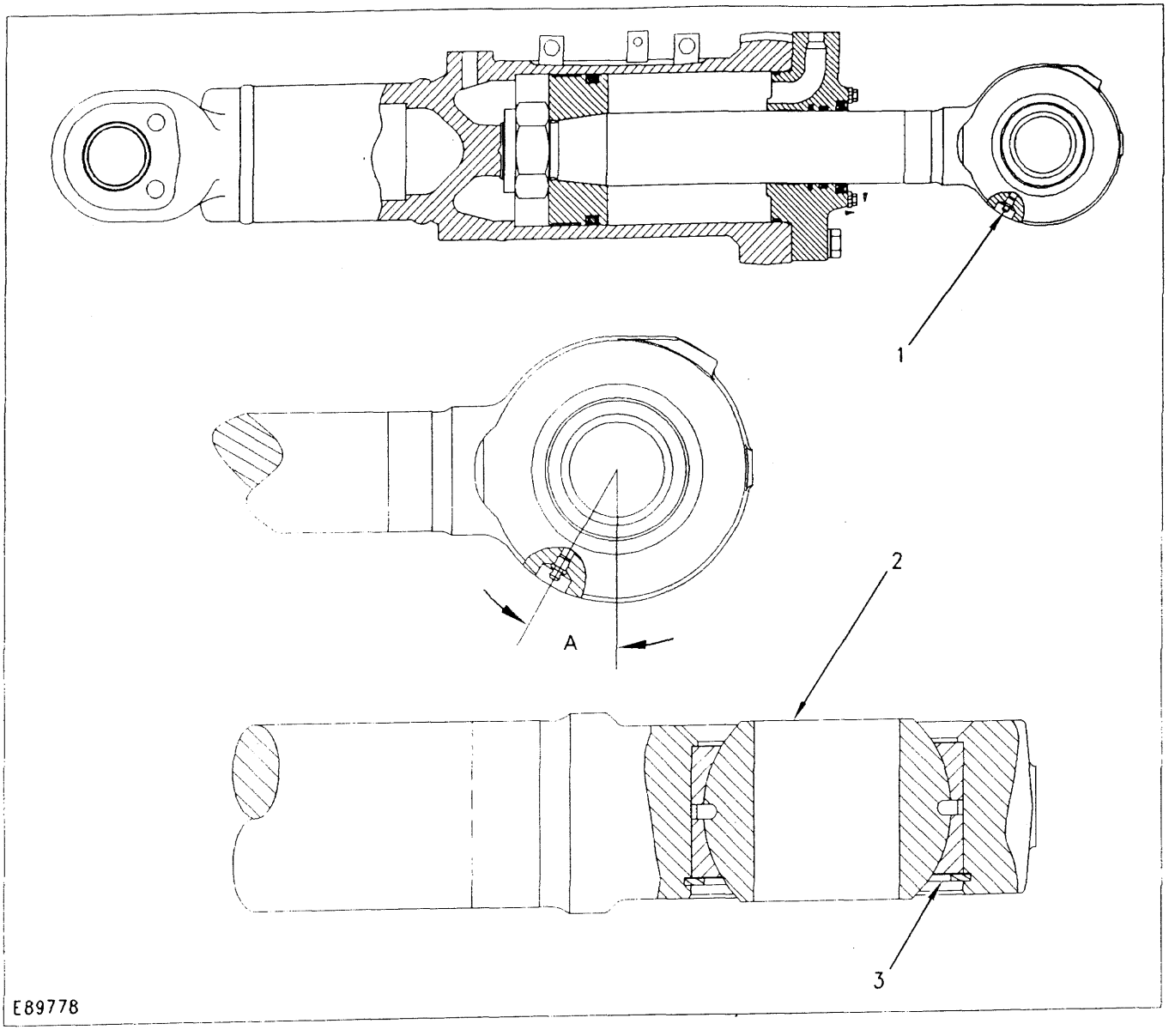
New Bearing and Grease Fitting in Rod End of Tilt Cylinders

5104

8A (27B, 05Y), 8S (04Y) Bulldozers; D8L (7YB, 7JC, 53Y), D8N (5TJ, 7TK), D8R (7XM, 9EM), D9N (1JD, 6XJ), D9R (7TL, 8BL) Track-Type Tractors

Description Of Change: A new bearing (self aligning) and a grease fitting, in the rod end of several tilt cylinders eliminate corrosion and seizure, associated with the former bearing.

Adaptable To: New 7J-3297 Bearing (Self Aligning) (2) and 3B-8489 Grease Fitting (1) were effective with machines and engineering changes listed in the chart.



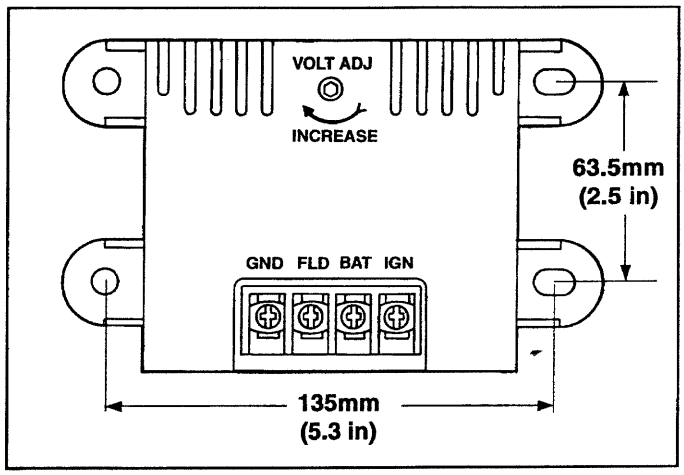
Typical Tilt Cylinder

(1) 3B-8489 Grease Fitting
(2) New 7J-3297 Bearing (Self Aligning)
(3) 5J-9454 Retaining Ring
(A) 30 Degrees
(B) 8.7 mm (.34 in) Dia.
25.5 mm (1.00 in) 10.0 mm (.39 in) Deep
1/8-27-NPSF Thread
8.0 mm (.31 in) Min. Depth

50 VR HEAVY DUTY REGULATOR

FEATURES

- Over voltage protection turns off field at high voltages.
- Short circuit protection turns off field when field lead is grounded or field coil is shorted.
- "Potted" for environmental protection.
- Replaces 50 RD regulators. Simple wiring modifications may be required.



SPECIFICATIONS

AMBIENT TEMPERATURE LIMITS:
160°F or 72°C Maximum

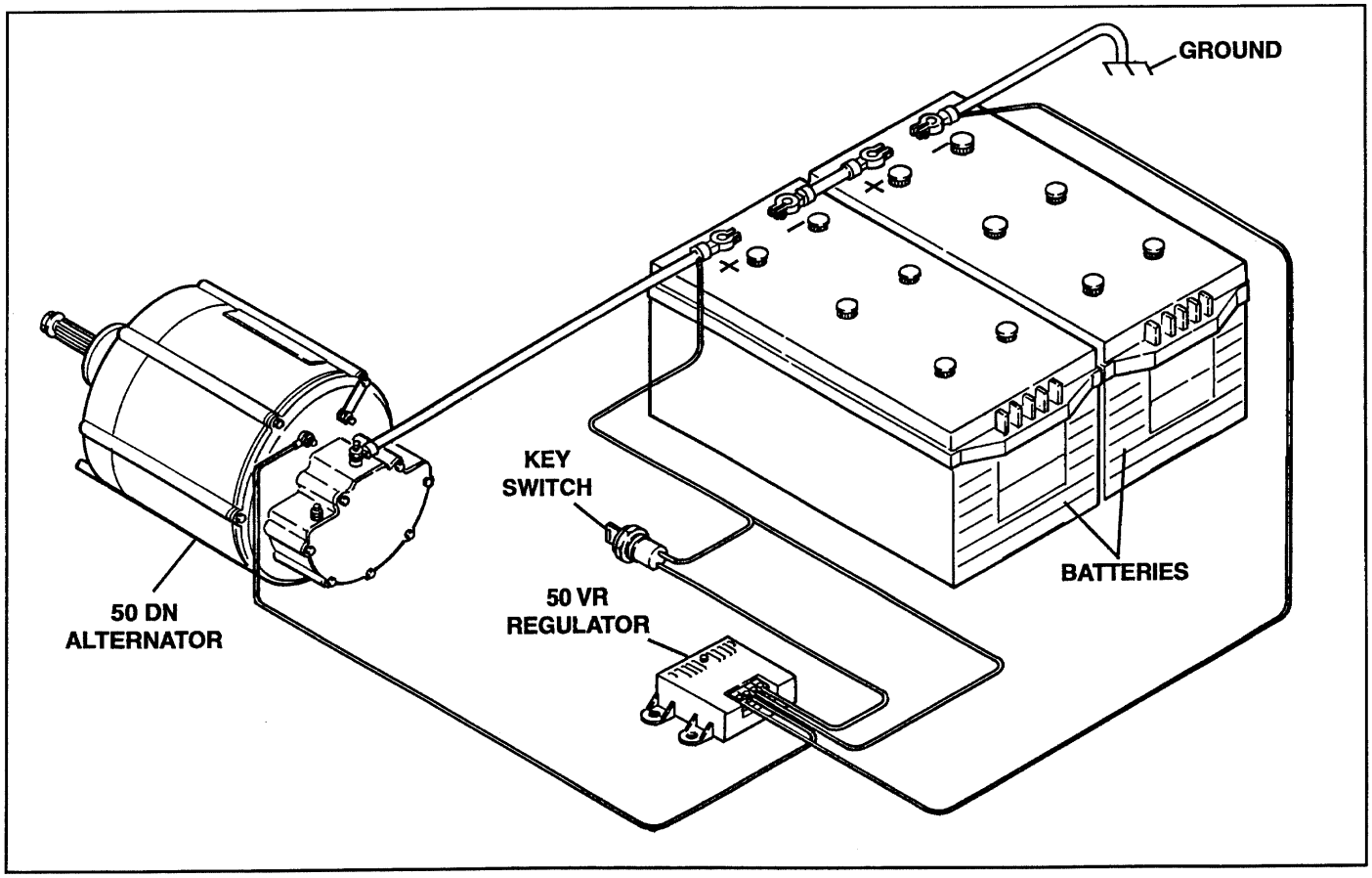
POLARITY:
Negative or Positive Ground

WEIGHT:
15 oz. or 0.42 kg

INTRODUCTION

The 50 VR Heavy Duty Regulator is designed for integrated circuits and protects against over voltage and short circuit. The 50 VR is designed for use on high output motor coach alternators with IC and MOSFET technology.

This service manual is an aid in troubleshooting and servicing the 50 VR Heavy Duty Regulator.



Typical Wiring Diagram (24V)

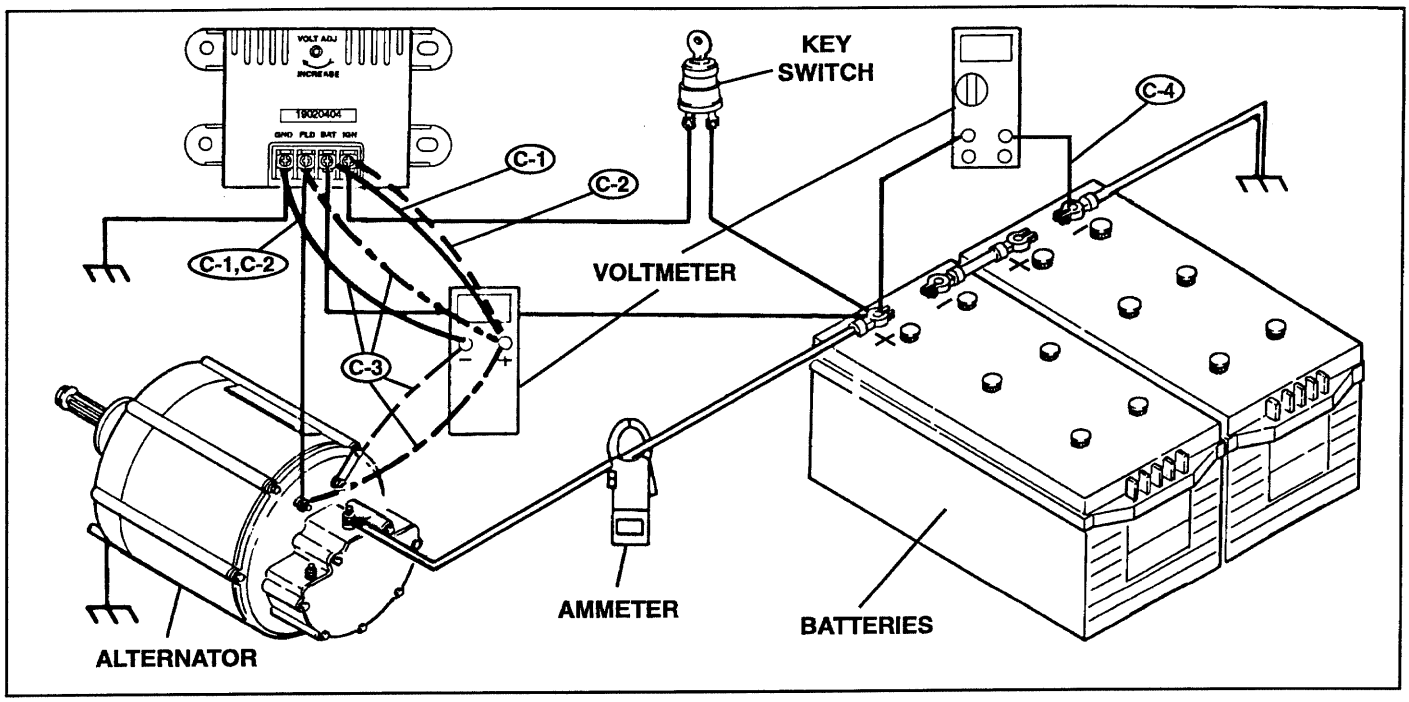


Figure 1. Checking Regulator.

TROUBLESHOOTING

REGULATOR

Trouble in the regulator circuit will cause symptoms of an undercharged battery or an overcharged battery.

A. Undercharged Battery Symptoms
- Dim Lights
- Low Dash Voltmeter Reading
- Slow or No Cranking
- Starter Solenoid Chatter
- Indicator Light on with Engine Running

B. Overcharged Battery Symptoms
- Lights Very Bright or Burned Out
- High Dash Voltmeter Reading
- Batteries Hot (Above 120°F or 50°C)
- Batteries Emit Unpleasant Odor

C. Checking Regulator

1. Install or connect an ammeter as shown in Figure 1 and a voltmeter with negative lead to "GND" and positive lead to "BAT" terminal on regulator and read voltmeter, reading should be approximately battery voltage. If not, repair ground or battery to regulator wiring and recheck to verify repairs.
2. Turn key "ON" and place positive voltmeter lead at regulator "IGN" terminal. Reading should be within 2 volts of "BAT" voltage. If so, go on to step 3. If voltage is low or zero, check switches and wiring between battery and regulator "IGN" terminal for open and loose connections and repair the defect. Recheck to verify the repair.
3. With voltage at "IGN", place voltmeter positive lead at "FLD". Reading should be within 3 volts of "BAT" voltage. If so, check voltage between alternator "F" terminal and ground (case). If alternator "F" voltage is near zero, find an "open" in wire from regulator "FLD" terminal to alternator "F" terminal and repair. Recheck to verify repair. If voltage at regulator "FLD" is still less than 5 volts, remove wire from "FLD" terminal and recheck. If now within 3 volts of battery voltage, check "FLD" wire for ground and alternator field for shorts or grounds. Recheck to verify repair. If voltage is still less than 5 volts, replace the regulator.
4. If an overcharged battery symptom exists and the voltage cannot be adjusted into the normal range (27V to 29V) by turning the adjusting screw (Figure 2) start the engine and turn on electrical loads to take about 50-100 amps from the alternator. Check voltage between regulator "BAT" and "GND" terminals. Compare this reading with voltage across the battery. If regulator voltage is more than 1V below battery voltage, check and repair connection and ground wires, between battery and regulator. If voltage still cannot be adjusted, replace the regulator and check alternator field for shorts or grounds.

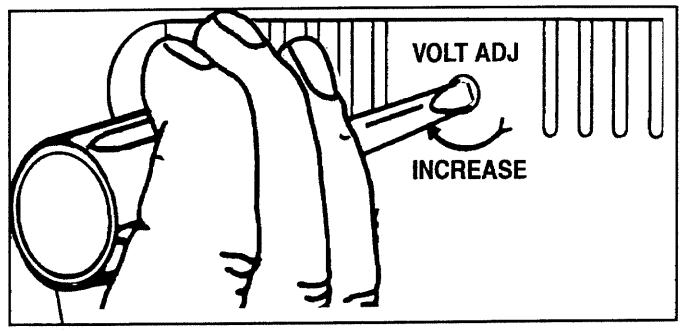


Figure 2. Adjusting Regulator Voltage Setting.